Jarvis (W. C.)

A NOVEL PROCEDURE

FOR

THE REMOVAL OF SUBGLOTTIC LARYNGEAL GROWTHS

WITH THE REPORT OF AN ILLUSTRATIVE CASE

BY

WILLIAM CHAPMAN JARVIS, M. D.

CLINICAL PROFESSOR OF LARYNGOLOGY AND DISEASES OF THE NOSE AND THROAT IN THE NEW YORK UNIVERSITY MEDICAL COLLEGE, AND LARYNGOLOGIST TO THE OUT-DOOR DEPARTMENT OF BELLEVUE HOSPITAL

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A NOVEL PROCEDURE FOR THE REMOVAL OF SUBGLOTTIC LARYNGEAL GROWTHS,

*With the Report of an Illustrative Case.**

In view of the numerous treatises on laryngeal growths which have appeared in print within the memory of laryngoscopic and even in pre-laryngoscopic times, it is reasonable at this period to expect something more than the customary recourse to a unique pathological condition as an ample basis for the presentation of another monograph. A careful study of the literature of the subject shows that cases similar to the one explained in the title of my paper, supplemented by the successful eradication of the neoplasm, have heretofore been considered sufficient reason for the elaboration of interesting essays.

It is only fair to state that these reasons—and an additional feature possessed by my case, namely, a novel, safe, and easy method of procedure, affording an exceptional opportunity for forming deductions concerning the question of laryngo-fission—are the data which principally prompted the preparation of this paper. It may be well to add that the term subglottic employed by me is taken in its restrict-

* Read before the American Laryngological Association at its eighth annual congress.

ed sense as applied to neoplasms attached entirely below the level of the lower cords.

The circumstances attending my relations with the patient whose history and treatment constitute the subject of my remarks, as drawn from my case-book, are substantially as follows :

On March 22, 1882, J. C., a cooper by trade, aged thirty-five, consulted me through the advice of Dr. M. J. Roberts, of New York, as a charity patient, for relief from a difficulty in speech and breathing. The change in his voice was first noticed within the last two years. Difficulty in breathing commenced about a year ago, and has gradually grown worse. There has never been any cough. His general health is excellent.

Examination.—The patient's voice has the character of a raucous whisper, resembling somewhat the sound produced by contact of the hypertrophied ventricular bands of chronic laryngitis in attempts made to phonate distinctly.

A laryngoscopic examination demonstrated the presence of a mass of papillomatous tissue which, during the act of speaking, could be seen covering the anterior margins of the vocal cords. A quiet inspiration made it possible to observe the papilloma occupying the cavity of the larynx, and also showed that the vocal cords and ventricular bands were not involved. I advised removal of the growth through the mouth. An attempt was made to seize it during phonation first with a Cusco forceps, but, not succeeding in this, and fearing that the sound structures might be accidentally injured, I discarded this instrument for Mackenzie's forceps. I succeeded in dragging away several small pieces with the last-named instrument, of about the size of a wheat kernel. Even this instrument, which has yielded such excellent results in the treatment of supra-glottic growths, was eventually abandoned as constituting a menace to the integrity of the neighboring healthy tissues. This liability to injure the peri-laryngeal structures was rendered greater by reason of the irritability of the individual's throat. To add to this difficulty, the tongue of the patient exhibited a most persistent tendency to rise posteriorly, and by this motion partly

blocked up the entrance of the fauces. Although I succeeded in removing the lingual obstruction by training the patient to grasp his tongue and then depressing it, I still had to contend with a most tantalizing state of pharyngeal irritability. Sometimes I boldly forced the slender blades of the forceps directly between the contracted cords, and by this manœuvre succeeded in removing the small fragments already referred to.

Mindful of the absolute safety with which my wire écraseur can be operated in the nasal and pharyngeal cavities, I naturally resorted to it in my dilemma. I was, however, doomed to disappointment, for, despite the assiduous employment of several grades of piano-wire and the exercise of great caution in its introduction, the loop was seized and displaced by the violent involuntary contraction of the laryngeal and pharyngeal constrictors. I then had recourse to my chromic-acid applicator, hoping to obtain some of the excellent results already related to you in the history of a patient presented to this society (1884), and which has given good results in the hands of others since the publication of the paper.

On May 20th I succeeded with great watchfulness in projecting the prepared probe across the interval of greatest irritability directly upon the growth. Blanching of the surface of the growth proved my aim was true. The shedding of the eschar followed in due time. I soon, however, discovered that it was impossible to confine the applications to the surface of the neoplasm because of its intra-laryngeal situation, and therefore abandoned this method, fearing that it might provoke the acute œdema which is apt to follow the action of this caustic when applied to loose folds of mucous membrane.

Further planning was rendered temporarily unnecessary by the disappearance of my patient.

In March, 1884, more than a year after his last visit, the patient consulted me again. His appearance had undergone a marked change in this time. His face was haggard and emaciated. Respiration was labored and clearly inadequate for the requirements of the individual. His efforts to speak were pain-

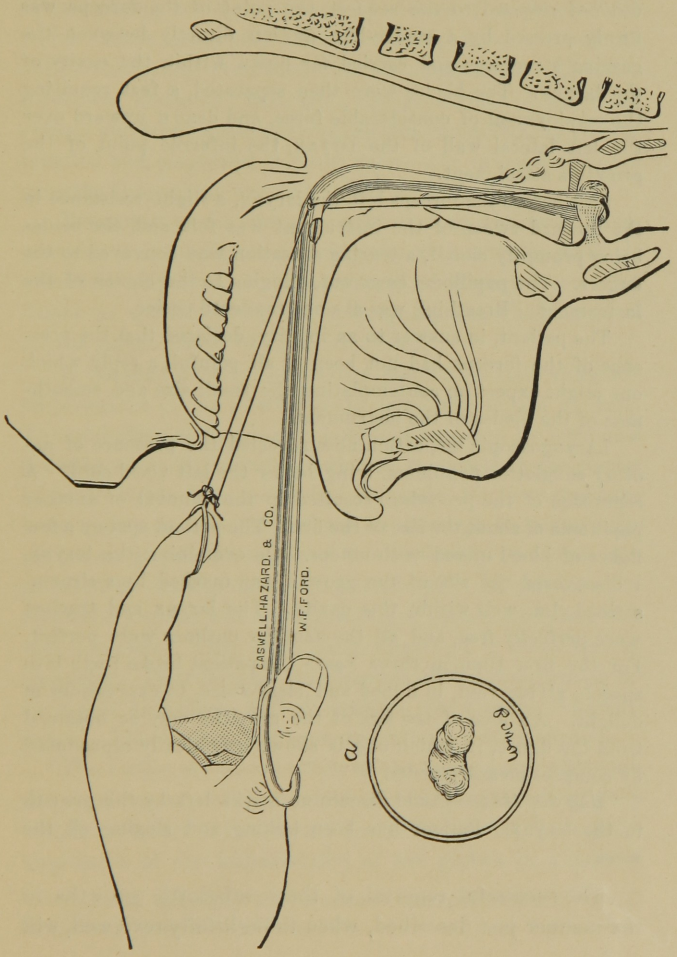
ful to witness, a coarse, muffled whisper or rattling sound being the usual result. He stated that after a hard struggle he had at last been compelled to give up work, and the problem of maintaining his much-dependent family served to increase his general misery. I realized that prompt relief in his dangerous condition was demanded, and consequently proposed to remove the growth by opening the wind-pipe. Willing, however, to grant him every opportunity of escaping this troublesome alternative, I, with his cheerful consent, endeavored to remove the growth which threatened his life while under the influence of a general anæsthetic. Suffocative symptoms, however, occurred before an effort to remove the growth could be attempted.

At this stage of my hitherto ineffective efforts the idea occurred to me that a device which would enable me to introduce a loop of piano-wire in such a manner as to prevent its displacement while within the larynx would enable me to encircle the neoplasm and tear it from its attachment.

Appreciating, in the first place, that an instrument would be needed possessing slender but powerful blades, I selected a stout Mackenzie's forceps, and had it modified to suit the several requirements. The biting portion of the blades was smoothly rounded, to prevent the tissue being seized by its points or sides. The points of the blades were also shaped like a wedge, in order to facilitate their introduction through the vocal cords (see figure), should these be in a state of spasm. Four openings were drille dthrough the ends of the blades, to serve as guides for the fine piano-wire. The diminutive rings placed at intervals along the arms of the forceps were to conduct the wire and prevent it from coming in contact with the mucous membrane of the throat. In mounting the instrument, the ends of the wire, carried through the eyes and ring-guides, were made to enter a binding screw. The instrument was grasped between the thumb and third finger, the index-finger being left free to manipulate the guide-ring.

On March 7, 1884, I first operated with this improvised laryngeal snare and successfully removed a papilloma (from the cavity of the larynx, in its entirety). My method of procedure was as follows: The forceps, properly armed with a strand of

No. 00 wire, was well lubricated with vaseline and guided toward the glottis by means of the laryngoscopic mirror. The persistent reflex spasm occurred as usual, but was for the nonce



disregarded, and the point of the forceps boldly projected held upon the powerfully contracted cords. The laryngoscope was now withdrawn and the patient was desired to inspire; as he did not respond to the request, the point of the forceps was firmly pressed by a wedge-like motion directly between the gasping structures and carried far down within the cavity of the larynx. The blades were then separated, a feat requiring the employment of considerable force, and drawn upward over the left lateral wall of the larynx, the inferred point of the growth's attachment.

Just before the forceps left the larynx, a slight resistance in the upward sweep of the instrument was felt, and, the blades being promptly closed, a tearing sensation was conveyed to the fingers. The papilloma came out, clinging to the blades of the instrument. Breathing was at once rendered easier.

The patient, in answer to an inquiry, declared that the presence of the forceps had not been at all painful, a reply which one might expect on contemplating the small size and smoothness of the blades of the instrument.

Laryngoscopic inspection now revealed the presence of another subglottic papilloma, lying below the left vocal cord. A repetition of the procedure resulted in the removal of another papilloma of about the size of the first. The patient spat up a few flakes of blood mixed with mucus. On examining the larynx, I discovered the site of the growth was marked by a circumscribed clot, well within this cavity. The larynx and trachea were perfectly free, and all the familiar outlines were perfect. For the first time in three years the patient broke forth into speech, giving vent, in a loud and clear voice, to expressions of delight. An idea of the size of the growths may be obtained from the figure, in which one is shown graphically reproduced by compass measurements.

May 30, 1884.—Could discern no marks left by the growth in the larynx. Patient has been talking and singing all the week.

The successful removal of these subglottic growths in the manner just described, when thoughtfully reviewed, will

be observed to aid in the establishment of several important but as yet unsettled questions. Two points, it seems to me, demand more than a mere mention—namely, the feasibility of extirpating laryngeal tumors by means of an instrument which can be safely and efficiently manipulated without the aid of vision, and even then offer advantages over the many piecemeal methods; and, next, the avoidance of the more serious and troublesome procedure almost universally recommended and employed in these cases—the removal of these growths through an opening in the neck.

Returning to the first proposition, I do not desire to be considered as totally condemning any of the various methods generally employed for the removal of laryngeal growths. These as a rule have found a proper place, yielding good results in the hands of their advocates.

A detailed description of the conditions indicating the employment of the snare-forceps need not detain us here. The multifarious forms and positions assumed by laryngeal growths naturally require increased resources in the choice of instruments and methods. It would, for instance, have been highly inadvisable for me to attempt to remove the exuberant papilloma reported to this society two years ago as cured by my chromic-acid procedure.* In this case the respiratory space was not much larger than a quill, and this was associated with inspiratory spasm of a most serious character. Instrumental interference in this case proved exceedingly hazardous, and its practice was therefore unjustifiable. These cases, however, are reported as infrequent.

The deliberate introduction of the forceps-snare between the vocal cords, while in a state of violent contraction, deep within the cavity of the larynx, demonstrates that the popular impression of the impassability of the glottis in a state of

* "A New Method for the Removal of Laryngeal Growths," "N. Y. Med. Jour.," August 23, 1884, p. 206.

spasm is untenable. The operator must, of course, first satisfy himself that the respiratory slit is sufficient to permit spontaneous recovery from the spasm necessarily provoked. The small amount of space required for this purpose is surprising when we consider the extent of the growth, which nearly filled the larynx in the case just reported.

The question of rendering the glottis viable by the use of cocaine will naturally suggest itself to the minds of a few. While not unmindful of the usefulness of this anæsthetic in cases of irritable throat, I am not the less convinced, from my experience with sub- and supra-glottic growths since the treatment of the case, that it would have proved provokingly inefficient.

The credit of the earliest employment of the snare in laryngoscopic surgery clearly belongs to Dr. Walker, who describes a modified Gooch's cannula, in the London "Lancet" of 1861, by means of which he partially succeeded in removing a laryngeal growth. Gibbs followed with his exposed-wire snare, working on the Wilde principle, by the assiduous employment of which, in conjunction with chloroform anæsthesia, he succeeded in dragging out several laryngeal growths.

Gibbs's conclusion—that the various caustic and cutting methods ranged against his own are to be characterized, in his own words, as "a pecking-away system," liable to generate malignant disease—seems to me rather overdrawn. As regards these and Moura-Bourouillou's spiked snare, I have already shown that the exposed wire can not be properly manipulated in the larynx or lower pharynx, by reason of tis liability to become displaced by reflex contraction. In taking this view I am supported by several well-known workers in this operative field who have sought to overcome the defect by the use of rigid rings, which protect the fine wire. The very arguments advanced by the origi-

nators of these devices, though intended to be taken as commendatory, show the instruments to be of limited service in the treatment of subglottic laryngeal growths by the natural method, and of little value for the removal of supra-glottic neoplasms. An objection raised by several writers against laryngeal snares is the danger of the growth becoming detached from the loop and dropping into the larynx. The possibility of this accident occurring is most satisfactorily prevented by the snare-forceps, since the neoplasm is tightly grasped by the blades of the instrument.

I shall conclude my remarks with a brief reference to the second proposition — namely, the substitution of the harmless method offered by the snare-forceps for the more serious and troublesome practice of opening the wind-pipe, heretofore largely adopted in these cases. A retrospective glance at the literature of the subject demonstrates the fact that the first impulse generated by the discovery and intelligent employment of the laryngoscope was characterized by a praiseworthy effort to reduce the previously accepted indications for operation through artificial openings to the fewest possible number of cases. Indeed, no single factor appears to have contributed so much to the development of laryngology as a special branch of medicine as the meritorious effort to substitute natural methods of treating laryngeal obstruction for the so-called artificial measures of general surgery.

In pre-laryngoscopic times, intra-laryngeal growths were always removed from without. Immediately after the discovery of the laryngoscope, neoplasms within easy reach were eradicated through the mouth, and the development of laryngoscopic surgery emboldened the laryngologist to remove complicated neoplasms and to ultimately extend his operations into the cavity of the larynx. The last, it is

true, is rarely performed, but I believe it will become more popular as our operative resources increase.

In 1884 I presented the history of a patient from whose larynx a difficult papilloma had been successfully removed by my chromic-acid method. I laid particular stress upon the fact that the signal success which followed this operation served to contract the indications for tracheotomy, for in the preliminary examination of this case I had agreed with several consultants that this was the only treatment positively promising any amelioration or cure. The satisfactory results obtained in the treatment of the subglottic papillomata by the natural method just described, it seems to me, must contract the indications for the artificial method to a still greater extent.

Although the foregoing deductions, based upon two cases in my own practice, and the literature of the subject, may appear rather positive, they are nevertheless the outcome of mature and conscientious deliberation, and as such I shall unhesitatingly act upon them in the future; I therefore trust you will, either by the employment of similar measures or any method you may prefer, endeavor, with me, to reduce the frequency of operations on the neck for the removal of the simpler forms of laryngeal obstruction.

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